The Watt Count System

A sophisticated approach to home energy efficiency highlights technology transfers in energy supply and conservation

This contemporary home is a "Watt Count house," meaning that it is exceptionally energy-efficient because its design incorporates an energy conservation approach developed by a group of aerospace engineers and known as the Watt Count System.

On a lunar mission, temperatures outside the Apollo spacecraft ranged from a searing 400 degrees Fahrenheit to a supercold minus 400 degrees. Yet, inside Apollo, astronauts worked in something approximating homelike conditions, thanks to a highly advanced environmental control system whose total energy expenditure was equivalent to that of ten 150-watt electric light bulbs.

Apollo's extraordinary energy efficiency impressed even the people who helped develop the spacecraft and sparked an idea: why not apply similar methodology to Earth structures? From that idea, there has emerged a superefficient energy conservation technique known as the Watt Count System, which combines aerospace and computer technology,

Among spinoff features of the Watt Count System is use of aluminized "heat shield" insulation once employed as a radiation barrier in the Apollo spacecraft.

an engineering systems design approach, and the environmental control expertise of a group of engineers who worked on Apollo.

Watt Count originated at Arnold Engineering Development Center, Tullahoma, Tennessee, which was engaged in test and evaluation of Apollo systems. Among the center's personnel were four engineers involved in energy transfer research who recognized that some of the space technology could effectively be applied to reduce energy consumption in residential and commercial buildings. The first Watt Count homes, built during the early 1970s, showed impressive results. After refining and improving their techniques, the group incorporated in 1977 as Watt Count Engineering Systems, Nashville, Tennessee.

Today there are more than 600 Watt Count homes in Tennessee, others in neighboring Kentucky, and acceptance of the innovative system is growing rapidly.

The first step in the Watt Count System is a computerized energy consumption analysis based on plans for a new home. The company calculates heating and cooling loads and customizes the most energy-efficient system for the particular structure analyzed. Optimum insulation is combined with a specifically-designed heat pump central heating and air conditioning system. Installation of insulation and heating/cooling equipment is handled by a network of authorized dealers whose personnel are specially trained in Watt Count methodology. During construction, Watt Count provides a quality control engineer to assure that insulation and ducting are installed according to specifications. Watt Count officials say their analysis and design techniques are so accurate they are able to give homeowners a two-year guarantee that the home's energy consumption will not exceed the kilowatt hour level determined by the computer in the energy consumption analysis.

A key factor in the Watt Count System is careful selection of insulating materials, several types of which may be used in a single structure. A distinguishing Watt Count feature is the use—usually on walls exposed to the outside—of a highly effective aluminized "heat shield" once employed as a radiation barrier on the Apollo Command and Lunar Modules and on other space systems; this material serves to hold in or keep out radiant heat, air flow and water vapor. The combination of Watt Count techniques provides sharp reductions in energy costs, company officials say; they cite an annual energy performance comparison in which a Watt Count home used 45 percent less energy than a conventionally-equipped equivalent home next door.